Closed Suction Catheter-NICU

Purpose: To provide a sterile closed system for suctioning patients with artificial airways who are at risk for cardiopulmonary compromise secondary to disconnection from the ventilator.

Description: Closed systems allow for suctioning a patient on a ventilator without loss of PEEP or mean airway pressure.

Indications: 1. PEEP ≥ 5 cm H2O. 2. Secretion precautions. 3. Adverse increase or decrease of heart rate, cardiac rhythm, blood pressure, SpO2, or PaCO2 when the patient is removed from ventilatory support for suctioning. 4. Patients at risk for pulmonary bleeds secondary to PDA, PPHN, or surfactant administration. 5. Increased amount of secretions requiring an increase in suctioning frequency. 6. Physician order.

Contraindications/Hazards/Complications:
1. Hypoxia
2. Vagal stimulation
3. Cardiac arrhythmia
4. Tracheitis
5. Damage to mucosal membranes.
6. Airway occlusions
7. Sudden death
8. Bleeding disorders
9. Loss of volume delivered if thumb control left unlocked.


Personnel: Respiratory therapists and technicians. Registered Nurses

Procedure: Installing Closed Catheter System
1. Check for appropriate indication or physician orders.
2. Wash hands and apply appropriate personal protective equipment.
3. Choose the appropriate size catheter for the endotracheal size. Use a 6Fr catheter for 2.5 and 3.0 mm ID tubes and use an 8Fr catheter for 3.5 and 4.0 mm ID tubes.
4. Check suction set-up. Set vacuum at 120 cm H2O with the thumb control depressed.
5. Choose the correct sized ETT adapter from the catheter kit.
6. Change out ETT adapters and monitor for stabilization.
7. While one person hand bags the patient, a second person disconnects the inspiratory, expiratory, and pressure manometer tubing from the patient wye.
8. Connect the inspiratory, expiratory, and pressure manometer tubing to the catheter kit wye.
9. Connect the catheter kit wye to the ETT adapter and monitor chest expansion and prescribed PIP to ensure that no leak exists.

10. Monitor pulse oximeter for stabilization.

11. Lock thumb control and place daily change sticker on the thumb control valve in a vertical position. This will be a visual check to ensure that the suction is off when the label is aligned and on when the label is not aligned.

12. Note length of the ETT. Check the cm mark closet to the adapter.

13. Add 5 cm for space taken up by the new patient wye.

14. Add 1/2 cm to ensure that the catheter tip extends only 1/2 cm beyond the end of the ETT. Example:

   \[
   \text{ETT length} + \text{Adapter length} + \text{Cath} > \text{ETT} = \text{Safe Sx length or}
   \]

   \[
   15\text{cm} + 5\text{cm} + 1/2 \text{cm} = 20 1/2\text{cm}
   \]

15. Note color on suction catheter at cm mark determined by the above measurements.

16. Post a card with this information on the patient's ventilator/

Procedure: **Suctioning with the Closed Catheter System**

1. Wash hands and apply personal protective equipment.

2. Auscultate chest.

3. Attach saline vial to port reserved for this procedure.

4. Note pulse ox reading and turn suction control to on position.

5. Pre-oxygenate patient at 10 -15% above the prescribed Fi02.

6. Instill a small amount of saline. Synchronize instillation with inspiration to avoid backwash into ventilator circuit.

7. Grasp catheter through the plastic sheathe, advance into ETT.

8. Advance catheter until the predetermi ned color is visible in the window of the adapter. (The catheter tip should be at the safe suctioning level.)

9. Depress the thumb control continuously while steadily removing the catheter.

10. Do not pull the catheter beyond the O-ring flap. The black tip of the catheter should be just beneath the distal saline port.

11. Depress thumb control while instilling saline into distal port. (It is important to clear the catheter after each pass to ensure maximal internal lumen is available for clearance of secretions.)

12. Note secretion characteristics through the clear window just proximal to the thumb control valve.

13. Turn thumb control valve to off position. Daily change label should be aligned.

14. Remove saline vials and firmly re-cap ports.

15. Return ventilator to previously prescribed Fi02.

16. Discard personal protective equipment and wash hands.

17. Chart as per department policy.

Infection Control:

1. These catheters will be changed out Q24 hours on the 7-3 shift.

2. Aseptic technique should be maintained.

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